

Research on multiple intelligences theory and its enlightenment to higher education

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ABSTRACT: The theory of multiple intelligences, which has been successfully used in the education and teaching reform in the west, has been brought forward for many years. Many researches have been done and some achievements are attained in our country at the end of the twentieth century, but it is different from theoretical discussion when it was in practical use. The current higher education system plays a great constraining role, which represents control phenomenon among the talent training and the evaluation system of teachers. It is extremely necessary to explore the feasible education reformation route, regarding the multiple intelligence theory as the basic guiding ideology. Confirming the training objectives of colleges and universities, providing students with practice opportunities, and focusing on the development of individual superior intelligence will be used as a reference for the reform and development of higher education.

Keywords: multiple intelligence theory; higher education; practical; superiority intellect

The Ministry of Education should work hard on the training mode of college students during constructing the “Double First-rate” colleges and universities. However, the current higher education lacks the cultivation of superior intelligence and needs to improve the cultivation of students’ multiple intelligences. With respect to the training modes of college students, it is inevitable to build the student-oriented training mode of higher education, which centers on multi intelligence training, and focuses on cultivating the superior intelligence in order to adapt to the new situation and to build world-class universities.

1 THE THEORY OF MULTIPLE INTELLIGENCES AND ITS APPLICATION AT HOME AND ABROAD

In 1983, Dr. Howard Gardner, professor of developmental psychology at the Institute of Education of Harvard University, put forward his theory of multiple intelligences in Harvard educational research project Zero, and published *The Structure of Intelligence* ^[1]. He thinks that the nature of intelligence is the ability

to solve their own difficult problems and to create effective products for society in a certain social and cultural background. On the intelligence structure, people have a variety of intelligences, and each of them is independent. Multiple intelligences include verbal-linguistic intelligence, musical-rhythmic intelligence, logical-mathematical intelligence, visual-spatial intelligence, bodily-kinesthetic intelligence, self-knowledge introspection intelligence, and interpersonal intelligence. In 1995, the natural observation intelligence was added and became the eighth kind of intelligence. [2]

The theory of multiple intelligences has been proposed for more than 30 years, which has become the guiding ideology of the reform of education and teaching in the West after 90s, and has a broad and profound impact on American education. Many schools have adopted the theory of multiple intelligences to guide the teaching reform. Now, there are hundreds of schools in the United States claiming to be multiple intelligences schools. A large number of teachers applied this theory and then achieved remarkable results in the teaching process. Since the theory of multiple intelligences was introduced into China at the end of the twentieth century, there has been an upsurge of research. However, many researches still remain at theory stage, and the actual

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cases or successful teaching reform cases didn't come up. Professor Huo Liyan, doctoral tutor of Comparative Education Research Center of Beijing Normal University (BNU), began to study the theory of multiple intelligences in the late 1990s. He undertook the "10th Five-Year Project" of the ministry of education, "Multiple Intelligence Theory and Early Childhood Education Reform", and published *The Theory of Multiple Intelligences in Practice*. [4] Other research results are in *Teaching and Learning of Multiple Intelligences* wrote by Meng Qingmao, professor of psychology of BNU and *The Theory of Multiple Intelligences and the Reform of School Education* wrote by Ceng Xiaojie in Institute of International and Comparative Education of BNU. Professor Huo did not disclose the specific measures of practice and the effect of implementation though he tried to apply the theory of multiple intelligences to educational practice in Beijing, Shenzhen and other places.

2 ANALYSIS ON THE PRESENT SITUATION OF HIGHER EDUCATION IN CHINA

The education of colleges and universities in our country should focus on the cultivation of students' ability, especially the development of certain ability. According to Gardner's theory of multiple intelligences, individual intelligence in a certain area should be brought into full play, which is specialty training, here we called it superior intelligence training. [5] But now the slogan is "comprehensive development", so students dabble in various aspects, but are not proficient, and they even do not know what they can do, what their expertise in employment is, and let alone what their strengths are. It not only fell short of the needs of all kinds of social work, but also has a negative impact on the psychological development of students, which will make their self-confidence be hurt, and is not conducive to cultivating the personal superiority intelligence.

At present, most of college students are in a dilemma. They worked really study in middle school, and have little or no time to find their own interests and expertise. In addition to preparing for the courses of the entrance examination and coping with frequent tests, middle school students do not even know their own superiority intelligence as well as have little knowledge of the major, curriculum and training model of college. After entering the university, the so-called good students may still adhere to the learning methods in high school, access excellent results, and get scholarships every year, whose achievements obtained after graduation are not as good as that in school. At present, some colleges and universities don't divide majors in the freshman year, which is worthy of praise. Although the student's superior intelligence training is still not the center, it is a big step forward in the history of education reform.

Even if students choose the specialty according to their own hobbies, they must learn the courses specified by the national education program. The optional courses are less and less which limits the development of students' intelligence advantage. Difference classified by schools is not enough to meet students' needs, because the superior intelligence can only be known by individual and even can be realized in certain social and cultural context. As professor Gardner said in *Reconstruction of Intelligence: Intelligence in the Twenty-first Century* that intelligence is the physiological and psychological potential of an individual to deal with information in a cultural environment, which can be activated by the cultural environment to solve practical problems and create products that the culture values. So, it is difficult for schools to grasp development trend of each student from a macroscopic view. Therefore, in order to realize the differential training, they should pay attention to the development of personality and the cultivation of superior intelligence, and should make changes in specialty setting, curriculum arrangement, training system, etc. From professor Gardner's redefinition of intelligence we can think that the cultural environment and education may activate the potential ability existing in each person, so there are obvious differences in people's intellectual developments in different cultural and educational environments, which can be reflected from Chinese students. They are excellent in scientific research projects or publishing papers when studying abroad, but these potential abilities seem to disappear after coming back for a period of time, which reflects the important influence of cultural environment and education on people's potential. According to Gardner's theory of multiple intelligences, there are only students with different intellectual characteristics and learning styles in school, and there should not be the so-called dunce. It is not realistic for the secondary education to give consideration to both the preparation of entrance examination and the cultivation of talents with all kinds of intelligence types, but the looser learning environment and free elective opportunity may provide students the possibility of development of potential in many aspects after entering the university. However, the education system in our country still needs to make more efforts to push forward relevant reform in order to give full play to the individual superior intelligence.

The reform of basic education emphasizes the cultivation of students' preliminary innovative spirit and practical ability. *Outline of Basic Education Curriculum Reform (Trial)* advocates students to be active to participate, be ready to explore, be diligent in hands-on practice, and trains students' ability to collect and process information, acquire new knowledge, analyze and solve problems, and communicate and cooperate with others. It also points out: "Vigorously promote the universal application of information technology in the teaching process, the integration of

information technology and subject curriculum, so as to gradually make changes in the presentation mode of teaching content, learning methods of students, teaching methods of teachers and teacher-student interaction mode, and take full advantages of information technologies, which will provide diverse education environments and useful learning tools for students' development". Therefore, it is necessary to set up a flexible and comprehensive evaluation concept during course teaching reform, and pay attention to students' application ability and creative ability. The cultivation of students' abilities besides examination can be integrated into the teaching process under the current education system, which is the main direction of teaching reform. However, there are no such requirements and incentives for the evaluation of teachers, and the students who are good at learning will fail to get high scores, which may influence the selection of the scholarship award and cause the mistrust of teachers' evaluation. Therefore, it is the key to get a balance point between the exam-oriented education and quality education in the course teaching reform. Simultaneously, colleges and universities should set up the corresponding policy, and don't regard the score as the only criterion. The curriculum design needs both theory and practice. On one hand the knowledge used in exams should be strengthened, on the other hand the application of the acquired knowledge should be presented in the teaching. For example, the computer class is very practical, which can be used instantly. It not only increases the perceptual knowledge, but also arouses students' learning interest, and promotes their active learning desire.

3 DISCUSSION ON THE TRAINING MODEL OF MULTIPLE INTELLIGENCES IN HIGHER EDUCATION

From the above analysis it is easy to find that there are many difficulties in the education and teaching reform which is guided by multiple intelligences theory, and the reasons are related to the system, students, and teachers. Teachers in the forefront of teaching have much experience in these aspects, and then, is there no feasible solution to promote the teaching reform? Take computer education as an example to elaborate the possibility of multiple intelligences theory as the guidance of education and teaching reform from the following aspects.

3.1 *Training objectives of university*

Taking the training objectives of undergraduates in Princeton University, the design of 12 standards includes the knowledge, ability and quality structure of innovative talents: (1) the ability to think, express and write clearly, (2) the ability to systematic reason in the critical mode, (3) the ability to conceptualize

and solve problems, (4) the ability to think independently, (5) the ability to innovate and work independently, (6) the ability to cooperate with others, (7) the ability to judge what means understanding something thoroughly, (8) The ability to distinguish between important things and little things, and between lasting things and transient things, (9) be familiar with the different ways of thinking, (10) have the depth of knowledge in a particular field, (11) the ability to observe the correlation between different disciplines, cultures, and ideas, (12) the ability to lifelong learn.

Higher Education Law of the People's Republic of China points out that undergraduate education should enable students to systematically master the basic theory and basic knowledge necessary for the respective discipline and specialty, master the basic skills, techniques and related know-how necessary for the respective specialty and acquire initial capability for the practical work and research work of the respective specialty. The law sets the goal of higher education from the macroscopic view. When it is specific to each one of the institutions of higher education, the goal should be made according to its level and type. However, it can be seen from the training objectives of several well-known universities that there is no specification. For example, the aim of the undergraduate education of Peking University is to carry out the basic education of higher education, and cultivate general talents with wide and deep basic knowledge, a strong sense of innovation, the strong capacity for self-directed learning and practical ability; that of Tsinghua University is to cultivate core talents with high quality, high level, diversity and creativity who can meet the needs of socialist construction and development; that of Tongji University is to cultivate morally, intellectually and physically developed specialized talents with strong foundation, extensive knowledge, strong ability, high quality and innovation spirit who can meet the needs of science and technology, economy and social development in the twenty-first century . [3]

Through the comparison of the training objectives of the undergraduate education between China and the United States, we can see that the goals in China are very high which are usually core talents and specialized talents; the target is very general, and is short of specific guidance and operability for the training links of undergraduate education, which is not conducive to students' personality development; there is no goal in the cultivation of students' morality, and the ability to cooperate with others. Besides, there is no mention of the academic and scientific research ability, and therefore our training objectives is not clear in form, which is more difficult to operate in the actual process of education. Because of the unhealthy tendencies in academic field, many teachers cannot calm down to teach students. So we should learn from the mature educational experience of foreign countries, and the training objective should be clearly positioned, spe-

cific and operable, which should be conducive to the comprehensive development of students, and give full play to the advantages of personal intelligence.

3.2 *Provide hands-on opportunities for students*

According to Gardner's theory, what the intelligence emphasizes is the individual's ability to solve practical problems and produce or create effective products needed by the society. [5] There is no doubt that providing hands-on opportunity will enhance the cultivation of intelligence in this area. Through the practical teaching experience of many years, our college education advocates to cultivate students' practical ability, but the teaching methods are still cramming education and lecture, and most researches on practical teaching only stay in the theory stage which are difficult to implement because of the reasons of both system and teachers. In order to carry out the practical teaching, schools and teachers should work together, and the support of macroeconomic policies is also important. For example, colleges and universities can build training bases and teaching training center for the students of law science, so as to strengthen the practical teaching of law science, and cultivate applied talents; they can also establish practical training base for the students of computer education, and organize them to participate in all kinds of business plan competitions and software design competitions, which not only enrich their school life, but also greatly enhance their practical ability.

Moreover, it is more important to cultivate students' practical ability in the theory courses, because they mainly study in the classroom. Therefore the abundant practical teaching in classroom is essential, and each course should have a specific practical teaching program, which must be carried out earnestly in the classroom. The educational administration department should play the role of guidance and supervision, and make sure all aspects of practical teaching can be implemented. For example, students must write a software program in the learning process in the *Data Structure* class, in which the data structure must be used, so that the high abstraction and logicity of this course can be understood during use. It not only enhances students' ability to write program, but also lets them gain perceptual knowledge about the data structure with better understanding, which will be useful for their work in the future.

3.3 *Pay attention to the development of students' superior intelligence*

Generally speaking, people with special skills can push forward the social development of certain fields, while the government has adopted effective measures, such as recruiting all kinds of talented students, art students, etc. However, most universities still recruit and cultivate all-round developed talents by the almost

unified, formatted and patterned training. Students who are excellent in all aspects in the school need to be tested in society, which challenges the objectives, methods and assessment of training of universities. Those whose superior intelligence is fully developed may achieve good results in some respects. For example, in 2006, Ge Zhenhui, a 21-year-old student of Henan Agricultural University, was absent from school for nearly half a year in order to write campus novels. He is not qualified students without doubt, but students should choose their own hobbies or speciality in college life, because the current evaluation methods in university cannot define whether they are good or not. However, it does not mean that we shouldn't learn the basic knowledge well, but the development of students' superior intelligence should be paid more attention in the learning process to cultivate talents with spirit of innovation.

Gardner's theory of multiple intelligences informs us that there are many kinds of intelligences in humans, so the comparison of intelligences between any two people is one-sided. We can only say that each person's intelligence is reflected in different aspects, that is, each person's intelligence combination is different, so the existence of idiot genius can be easily explained. As Gardner pointed out that there are no two people with the identical intelligence combination in the world, and every child is a potential genius. So, everyone has their own superior intelligence, and the key is how to find, guide, cultivate, and strengthen it. If the secondary education is based on this theory, then the best time to guide and develop the superior intelligence is in college.

4 CONCLUSION

Colleges and universities should often make more efforts to help students to form a sense of accomplishment and self-confidence. Gardiner's theory of multiple intelligences pointed out that although not all students have a gift for verbal expression or mathematics, they may be excellent in music, spatial relationships, or interpersonal knowledge. [5] The establishment of guiding method and the efforts of evaluating students' learning will encourage many college students to actively participate in learning activities, establish good relationships with teachers, and show their own talents, which should be the fundamental objective of the development of higher education.

ACKNOWLEDGEMENT

This paper is supported by 2014 Shandong soft science research project "Research on the development strategy of Shandong software and information service industry" (Project No.: 2014RKB01538).

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